

10-1

Skills Practice

Circles and Circumference

For Exercises 1–5, refer to the circle.

1. Name the circle.

$\odot P$

2. Name a radius.

radius \overline{AP}

3. Name a chord.

radius \overline{DE}

4. Name a diameter.

\overline{AB}

5. Name a radius not drawn as part of a diameter.

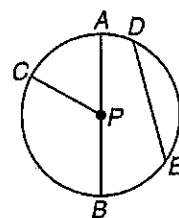
\overline{CP}

6. Suppose the diameter of the circle is 16 centimeters. Find the radius.

8

7. If
- $PC = 11$
- inches, find
- AB
- .

22



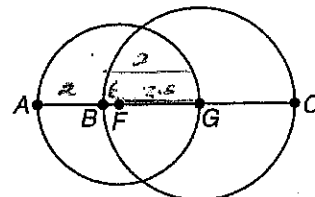
The diameters of $\odot F$ and $\odot G$ are 5 and 6 units, respectively. Find each measure.

- 8.
- BF

$\frac{1}{2}$

- 9.
- AB

2



The radius, diameter, or circumference of a circle is given. Find the missing measures to the nearest hundredth.

- 10.
- $r = 8$
- cm

$$d = 16, C \approx 16\pi$$

- 11.
- $r = 13$
- ft

$$d = 26, C \approx 26\pi$$

- 12.
- $d = 9$
- m

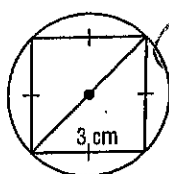
$$r = 4.5, C \approx 9\pi$$

- 13.
- $C = 35.7$
- in.

$$d \approx 11.36, r \approx 5.68$$

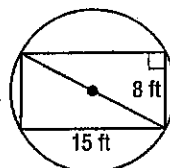
Find the exact circumference of each circle.

- 14.



$$C = 30\pi$$

- 15.



$$64 + 225$$

$$289$$

$$17$$

$$C = 17\pi$$

10-2 Skills Practice

Angles and Arcs

ALGEBRA In $\odot R$, \overline{AC} and \overline{EB} are diameters. Find each measure.

1. $m\angle ERD$ 28

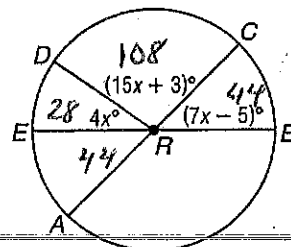
2. $m\angle CRD$ 108

3. $m\angle BRC$ 44

4. $m\angle ARB$ 136

5. $m\angle ARE$ 44

6. $m\angle BRD$ 152



$$26x + -2 = 180$$

$$x = 7$$

In $\odot A$, $m\angle PAU = 40^\circ$, $\angle PAU \cong \angle SAT$, and $\angle RAS \cong \angle TAU$. Find each measure.

7. $m\overline{PQ}$ 90

8. $m\overline{PQR}$ 180

9. $m\overline{ST}$ 40

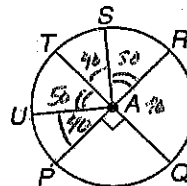
10. $m\overline{RS}$ 50

11. $m\overline{RSU}$ 140

12. $m\overline{STP}$ 130

13. $m\overline{PQS}$ 230

14. $m\overline{PRU}$ 320



The diameter of $\odot D$ is 18 units long. Find the length of each arc for the given angle measure. $C = 18\pi$

15. \overline{LM} if $m\angle LDM = 100$

$$\frac{100}{360} 18\pi = 5\pi$$

16. \overline{MN} if $m\angle MDN = 80$

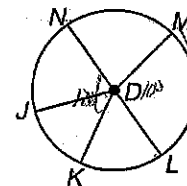
$$\frac{80}{360} 18\pi = 4\pi$$

17. \overline{KL} if $m\angle KDL = 60$

$$\frac{1}{6} 18\pi = 3\pi$$

18. \overline{NJK} if $m\angle NDK = 120$

$$\frac{12}{36} 18\pi = 6\pi$$



19. \overline{KLM} if $m\angle KDM = 160$

$$\frac{160}{360} 18\pi = \frac{8}{9} 18\pi = 8\pi$$

20. \overline{JK} if $m\angle JDK = 50$

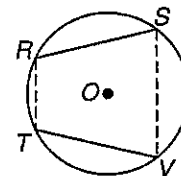
$$\frac{5}{36} 18\pi = \frac{5}{2} \pi$$

10-3 Study Guide and Intervention

Arcs and Chords

Arcs and Chords Points on a circle determine both chords and arcs. Several properties are related to points on a circle.

- In a circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.
- If all the vertices of a polygon lie on a circle, the polygon is said to be **inscribed** in the circle and the circle is **circumscribed** about the polygon.



$\overline{RS} \cong \overline{TV}$ if and only if $\overline{RS} \cong \overline{TV}$.

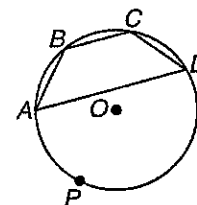
$RSVT$ is inscribed in $\odot O$.

$\odot O$ is circumscribed about $RSVT$.

Example

Trapezoid $ABCD$ is inscribed in $\odot O$. If $\overline{AB} \cong \overline{BC} \cong \overline{CD}$ and $m\widehat{BC} = 50$, what is $m\widehat{APD}$?

Chords \overline{AB} , \overline{BC} , and \overline{CD} are congruent, so \widehat{AB} , \widehat{BC} , and \widehat{CD} are congruent. $m\widehat{BC} = 50$, so $m\widehat{AB} + m\widehat{BC} + m\widehat{CD} = 50 + 50 + 50 = 150$. Then $m\widehat{APD} = 360 - 150$ or 210 .



Exercises

Each regular polygon is inscribed in a circle. Determine the measure of each arc that corresponds to a side of the polygon.

1. hexagon

$$60^\circ$$

2. pentagon

$$72^\circ$$

3. triangle

$$120^\circ$$

4. square

$$90^\circ$$

5. octagon

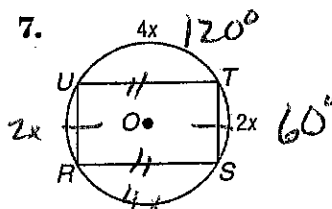
$$45^\circ$$

6. 36-gon

$$10^\circ$$

Determine the measure of each arc of the circle circumscribed about the polygon.

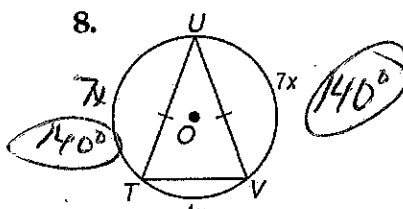
7.



$$6x = 180$$

$$x = 30$$

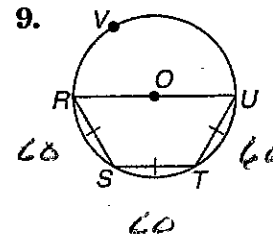
8.



$$18x = 360$$

$$x = 20$$

9.



10-3 Skills Practice

Arcs and Chords

In $\odot H$, $m\widehat{RS} = 82$, $m\widehat{TU} = 82$, $RS = 46$, and $\overline{TU} \cong \overline{RS}$. Find each measure.

1. TU 46

2. TK 23

3. MS 23

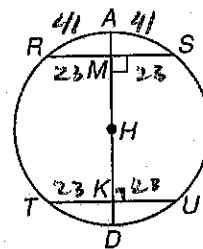
4. $m\angle HKU$ 90°

5. $m\widehat{AS}$ 41°

6. $m\widehat{AR}$ 41°

7. $m\widehat{TD}$ 41°

8. $m\widehat{DU}$ 41°



The radius of $\odot Y$ is 34, $AB = 60$, and $m\widehat{AC} = 71$. Find each measure.

9. $m\widehat{BC}$ 71°

10. $m\widehat{AB}$ 142°

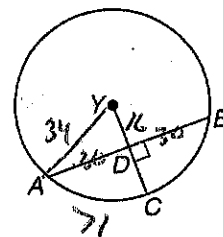
11. AD 30

12. BD 30

13. YD
16

$$\begin{array}{r} 34 \\ - 16 \\ \hline 18 \end{array}$$

14. DC
18



In $\odot X$, $LX = MX$, $XY = 58$, and $VW = 84$. Find each measure.

15. YZ 84

16. YM 42

17. MX 40

$$\begin{array}{r} 58 \\ - 18 \\ \hline 40 \end{array}$$

18. MZ 42

19. LV 42

20. LX 40

